

Correlation of comorbid conditions with mortality and morbidity in covid - 19 patients

¹Dr. Anivilla Sai Kameswara Manoj, 3rd year postgraduate resident in department of general medicine, Pacific institute of medical sciences, Udaipur.

²Dr. N. K Gupta, Professor and head, department of general medicine, PIMS, Udaipur S6, Mayura Apartments, near central academy school, sardarpura, Udaipur,313001

Corresponding Author: Dr. Anivilla Sai Kameswara Manoj, 3rd year postgraduate resident in department of general medicine, Pacific institute of medical sciences, Udaipur.

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Abstract

Coronavirus disease-19 (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The disease was first described in December 2019 in Wuhan, Hubei province, China, and has since spread globally. The World Health Organization (WHO) declared the coronavirus outbreak a pandemic on 11 March 2020 with disease transmission in more than 200 countries, We have conducted a observational study To examine specific comorbidities in relation to the COVID-19 disease progression and outcomes based on the literature report since the outbreak, The study included Sample size of 100 Patients who were admitted in covid isolation facility (ward and icu) with rtPCR positive for covid-19 along with HRCT changes. Here majority (38.46%) patients were of age group 36-55 years followed by 34.07% patients in age group 56-75 years. The mean age for study group was 49.79years. Majority of (84%) patients had shortness of breath followed by 80.2% had fever. Cough, weakness and body ache was seen in 76.9%, 16.4% and 7.6% patients, and we found that majority (29.6%) patients

who were of T2DM followed by 25.2% patients of Hypertension. Asthma, IHD and CVD was seen in 8.7%, 5.49% and 4.4% patients.

We has observed that presence of comorbidities is associated with a poor outcome in patients with COVID-19. Diabetes prevalence is highest in Indian COVID-19 patients, compared to other countries. Since majority of patients with mild COVID-19 recover without any major interventions, there should be no mandatory rule to admit every case of confirmed COVID-19. With regard to identifying the high-risk cases, those who are prone to progress to severe COVID-19 and are at a heightened risk of death, a risk-based scoring could be applied as an admission criterion to the hospital, in order to minimize the burden of already overwhelmed health infrastructure.

Keywords: COVID-19, comorbidities

Introduction

Coronavirus disease-19 (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).¹ The disease was first described in December 2019 in Wuhan, Hubei province, China, and has since spread globally.²

The World Health Organization (WHO) declared the corona virus outbreak a pandemic on 11 March 2020 with disease transmission in more than 200 countries. As of 23 April 2020, more than 2.5 million people have been infected worldwide with over 175,694 deaths.³ COVID-19 cases are on rise in India.

The pandemic outbreak of severe acute respiratory syndrome corona virus-2 (SARS-CoV-2), which is also known as corona virus disease 2019 (COVID-19), has been posing major impacts on health care.⁴ Since the declaration of the World Health Organization (WHO) of COVID-19 outbreak as an international public health emergency, different health-care policies have been adopted by countries worldwide.

During the pandemic, prioritizing medical services is crucial to avoid collapse of medical systems. The health-care system failures during the outbreak of Ebola virus in 2014–2015 contributed to the increased number of deaths caused by measles, malaria, HIV/AIDS, and tuberculosis.⁵ Therefore, maintaining the essential medical services during an outbreak is of premier importance to avoid increased morbidity and mortality contributed indirectly by the insufficiency or inappropriate distribution of medical resources. According to the guidance by the WHO, priorities of elective surgeries change over time and vary from country to country. The main factors to consider while scheduling the elective treatments including the level of outbreak, availability of the health-care service in the area, and estimated length of the shortage of services.⁶

From March 1 through 30, 2020, there were a total of 180 patients on COVID-NET, of which 89.3% of the patients had an underlying comorbidity.⁷ Of the 180 patients, 94.4% aged 65 years and older had at least comorbidity. The most common comorbidities found were obesity, hypertension, and diabetes mellitus.⁷ The purpose of this

paper is to review these comorbidities, given that most patients with severe COVID-19 cases had comorbidity. Furthermore, we would like to examine specific comorbidities in relation to the COVID-19 disease progression and outcomes based on the literature report since the outbreak.

Materials and method's

This was an observational study. We conducted this study on 91 COVID-19 patients admitted in covid isolation facility (ward and icu) in pacific institute of medical science and hospital during 1 march 2021 to 30 September 2021. All patients admitted in covid isolation facility (ward and icu) with rtPCR positive for covid-19 along with HRCT changes.

Inclusion Criteria

1. Patients with covid-19 Rtpcr Positive results
2. Patients with HRCT Thorax showing ground glass opacities, atypical pneumonia.
2. Patients of covid 19 present with comorbidities like hypertension, Cardiovascular diseases, Diabetes mellitus, Asthma, tuberculosis, Thyroid dysfunction (hyper/hypo thyroidism).

Exclusion Criteria

1. All the patients whose covid-19 RTPCR is Negative.

Results

In this study we found that majority (38.46%) patients were of age group 36-55 years followed by 34.07% patients in age group 56-75 years. The mean age for study group was 49.79years with majority (51.6%) of patients in our study were female.

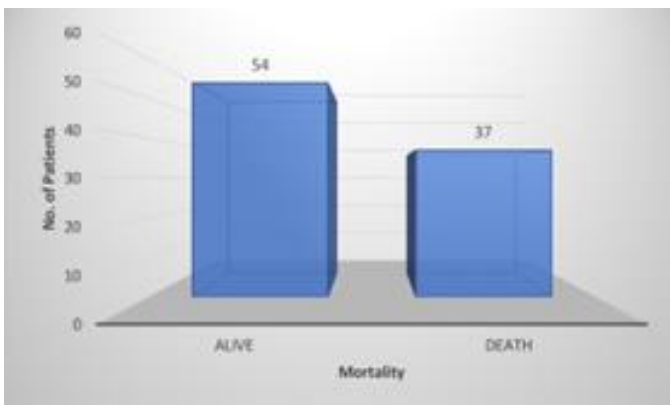
Figure 1: Distribution of cases according to Comorbidity.

Comorbidity	No. of Patients	Percentage
Type-2 Diabetes	27	29.67
Hypertension	23	25.27
Asthma	8	8.79

IHD	5	5.49
CVD	4	4.40

In above table we found that majority (29.6%) patients were of T2DM followed by 25.2% patients of Hypertension. Asthma, IHD and CVD was seen in 8.7%, 5.49% and 4.4% patients. Here we found that mean pulse rate on admission was 90.9 and on discharge it was 81.4. We found that mean SPO2 of our case group was improved after admission till discharge. The mean RBS for our group on admission was 208.29 and after treatment 187.47.

Figure 2: Distribution of cases according to Mortality.



Here we found that 40.6% patients in our study died. Majority (56.04%) of patients were of CORADS five followed by 36.2% patients with CORADS five. The mean CORADS was 5.24. We found that mean CTSC score for our study group was 13.75. Majority (29.67%) patients were of CTSC score in between 6-10.

Figure 3: Corelation of morbidity with mortality.

Parameter	Mortality			
	Alive		Death	
	No. of Patients	Percentag e	No. of Patients	Percentag e
Asthma	6	11.11	2	5.41
CVD	4	7.41	0	0.00
IHD	3	5.56	2	5.41
Hypertension	10	18.52	13	35.14
T2DM	17	31.48	10	27.03

Here we found that patients died in our study group had asthma (5.41%), IHD (5.4%), HTN (35.14%) and T2DM (27.03%). We found that asthma, CVD, T2DM were major comorbidity which were associated with mortality as p value was <0.05.

Discussion

Pandemic COVID-19 is causing huge morbidity and mortality throughout the world; however, the association of sex, age, or comorbidities with mortality has not been investigated in larger effect size. The findings may be considered as novel providing evidence that male patients, age ≥ 50 years, or had comorbidities were significantly associated with increased risk of mortality. Since risk of mortality was assessed for considerably large number of high-quality data of COVID-19 patients with different interventions, the evidence may, therefore, be considered as high standard.

Co-morbidity

We found that majority (29.6%) patients were of T2DM followed by 25.2% patients of Hypertension. Asthma, IHD and CVD was seen in 8.7%, 5.49% and 4.4% patients.

Due to COVID-19 being a relatively new and understudied disease, the data available is limited. However, from the cases that emerged, it was observed that comorbidities increase the chances of infection.⁹ Based on current information and clinical expertise, the elderly, especially those in long-term care facilities, and people of any age with serious underlying medical conditions are at a greater risk of getting COVID-19.⁹ The elderly, a vulnerable population, with chronic health conditions such as diabetes and cardiovascular or lung disease are not only at a higher risk of developing severe illness but are also at an increased risk of death if they become ill.¹³ People with underlying uncontrolled medical conditions such as diabetes; hypertension; lung,

liver, and kidney disease; cancer patients on chemo therapy; smokers; transplant recipients; and patients taking steroids chronically are at increased risk of COVID-19 infection.⁹

Mortality And Outcome

In our study 40.6% patients in our study died. we found that asthma, CVD, T2DM were major comorbidity which were associated with mortality as p value was <0.05. While examining comorbidity we found that patients died in our study group had asthma (5.41%), IHD (5.4%), HTN (35.14%) and T2DM (27.03%).

COVID-19 can cause severe disease leading to hospitalization in ICU and potentially death, especially in the elderly with comorbidities.¹⁴ According to the CDC, 8 out of 10 deaths reported in the USA occurred in adults 65 years old and above⁹. Roughly 80% of COVID-19-positive cases result in full recovery from the illness without any hospitalizations or interventions.¹⁵ There are still many facts that we do not know about COVID-19 due to gaps in knowledge; therefore, many studies are underway to better understand this virus.¹³ A study by Huang C et al¹⁰ found that 41 patients with confirmed COVID-19 in the hospital, 100% had pneumonia, 29% developed acute respiratory distress syndrome (ARDS), 15% exhibited an acute cardiac injury, and 12% acquired a secondary infection.¹⁰ The majority of these patients (68%) were discharged, 17% remained hospitalized, 10% ended up in the ICU, and 15% ended in death.¹⁰

In our study we found that mean age of dead patients was 55.78years and for alive patients it was 45.68years.

A similar study by Biswas M et al found that patients with age ≥ 50 years confirmed with SARS-CoV-2 infection were associated with 15.4-folds significantly increased risk of mortality as compared to patients with age. However, when compared these age-groups with the risk of SARS-CoV-2 infection, it was found that patients

with age ≥ 50 years were associated with only 3.45-folds significantly increased risk of SARS-CoV-2 test positivity compared to patients with age <50 years.

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